of our population die before the average age of marriage.

The possible remedies for the diseases of our social system are discussed. The increase of suicide, we are told in the very interesting discussion of the subject, is due to want of integration. We live in an age of rampant individualism, for which, however, socialism supplies no remedy. Religion has not the hold on man that it once had. Family life is less strong than it was, and tribes and village communities are things of the past. Men make away with themselves because they have no strong ties and no strong interests. In times of political commotion there are fewer suicides, apparently because there is plenty to think about. To a great extent the theory of want of integration explains the facts. But is our author right when he maintains that Roman Catholicism is a stronger integrating force than Protestantism? Is not the form of faith rather a symptom than a cause? The most go-ahead races have seceded from the church of Rome. The Roman Catholic peoples are more primitive and less industrial; and in this, as in most social questions, there are many factors to be taken into consideration. But however much we may disagree with some of Mr. Chatterton-Hill's conclusions, the book is a book to be read.

F. W. H.

OUR BOOK SHELF.

British Rainfall, 1906. *On the Distribution of Rain in Space and Time over the British Isles during the year* 1906. By Dr. H. R. Mill. Pp. 100+280. (London: Edward Stanford, 1907.) Price 10*s*.

THE present volume is the forty-sixth of this valuable and unique publication. It gives, in various forms, the results of observations made at 4267 points in the British Isles. The plan of the work is the same as last year, being divided into two parts:—(1) original papers and organisation reports, (2) monthly and yearly rainfall tables, particulars of wet periods, and observers' notes on the principal meteorological occurrences of the year.

Dr. Mill gives an interesting discussion of the great snowstorm of December 25–26, 1906, illustrated by two maps; one of these shows the rate of movement across the country with greater detail than has probably been previously attempted. The area covered by the storm extended from the north-west of Scotland to the English Channel, the advance being least rapid in the north, where it was 12½ miles an hour, and most rapid in the south, where it was about 19 miles an hour; a motor-car could have kept out of the storm without exceeding the legal speed limit.

The frontispiece is a coloured map showing very clearly the relation of the rainfall of 1906 to the average of 1870–99. Generally speaking, the fall over the whole country in 1906 was near the average; Scotland had a pronounced excess, and Ireland a scarcely less pronounced deficiency. The timely revision and publication of such a mass of materials is only rendered possible by the interest taken by the staff in the work and by some valued voluntary assistance. The usefulness of the undertaking is recognised by such public bodies as the Meteorological Committee, the Metropolitan Water Board, and others, who pay for the information they receive, but the main burden of expense has been hitherto borne by the observers and those interested in rainfall investigations. We agree with Dr. Mill in thinking that no piece of work of equal magnitude is done so cheaply.

Le Feste Giubilari di Augusto Righi. Pp. vi+143. (Bologna: Nicola Zanichelli, 1907.)

THIS little work is a *Festschrift* in honour of Prof. Righi, giving an account of the ceremony recently held to celebrate the completion of his twenty-fifth year of university teaching. This period really expired in 1905, but it was decided by the committee organising the *fêtes* to postpone the celebration so as to make it coincide with the inauguration of the new Institute of Physics at Bologna, which is placed under Prof. Righi's charge. The ceremony actually took place on April 12. Prof. Righi delivered his first lecture in the new building, choosing for his subject the "Hypothesis of the Electrical Nature of Matter." Prof. Blaserna, on behalf of the subscribers, then presented the lecturer with a bust of himself in bronze. Congratulatory letters and telegrams received from all parts of the world were subsequently read. The *Festschrift* contains Prof. Righi's lecture printed in full, together with all speeches, letters, &c., received. It is illustrated with many photographs of Prof. Righi and of the new institute. A complete list of Prof. Righi's scientific publications, numbering two hundred and seventeen in all, and a chronological review of his career are appended.

The Half-tone Process. By Julius Verfasser. Fourth edition. Pp. 348. (London: Iliffe and Sons, Ltd., 1907.) Price 5*s*. net.

THE author describes his work in the sub-title as being "a practical manual of photo-engraving in half-tone on zinc, copper, and brass, with a chapter on three-colour work." In preparing the new edition he has thoroughly revised the work, and added to it so that it describes as far as possible the making and proofing of half-tone blocks as at present practised. The subject is treated in a strictly practical way, obsolete methods and historical details find no place in it, nor does the author venture into the future. Apparatus that every worker must buy is not described with excessive minuteness, but such information as is necessary for using it to the best advantage is clearly set forth. No theoretical considerations are introduced, except in connection with such matters as the cross-lined screen and the management of electric arc lights, and then only in the simplest manner as being the best guide to the intelligent use of the apparatus. After ten chapters on appliances, the author describes with all necessary formulæ the operations of making the negative, printing, etching, finishing, mounting, and proofing the plates. The chapter on the three-colour half-tone process assumes a general knowledge of the principles involved, and refers only to the additional manipulation necessary. The two examples of three-colour work are not much credit to the process, but the other illustrations, which are numerous, are useful and good.

The Alphabet of the Universe: Notes for a Universal Philosophy. By Gurney Horner. Pp. 44. (London: Hayman, Christy and Lilly, Ltd., 1907.) Price 1*s*. net.

THE aim of the author of these "skeletonic and informal notes" is "to find the one objective 'Something'—a quest in which humanity has hitherto been baffled and defeated." He is so obviously convinced that notwithstanding "the failure of Plato, Aristotle, and all later philosophers," he has really solved "the problem of the *Method* of the Universe" that he may perhaps be forgiven for allowing his "epoch-making discovery" to be announced in language which inevitably prompts the cautious reader to assure himself

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that he has not been entrapped by the advertisement of a new patent remedy. Mr. Horner appears to be entitled to the credit of having arrived twenty-five years ago at the now fashionable doctrine that man is essentially a behaving animal—or, as he expresses it, that "man's life is made up simply of a series of acts"—and of having anticipated the Pragmatists in the deduction "that acts form the only proper basis of philosophy." Unfortunately, he has shown in these pages no competence to construct upon this basis anything with which, even in these hard times, philosophy should be asked to allow her name to be connected.

The More Important Insects Injurious to Indian Agriculture. Memoirs of the Department of Agriculture in India, vol. i., No. 2, Ento. Ser.) Pp. 139+v; 80 figures. By H. Maxwell-Lefroy. (Pusa: Agricultural Research Institute, 1907.) Price Rs. 3.

The above-named paper is a very excellent foundation for the young economic entomologist in India to work upon. The chief insects known to be injurious to crops in India are briefly described in systematic order.

The method of treatment of this subject is novel, and might well be copied by others compiling similar lists.

The technical name of each pest is given, and then one or two references of interest and a short, concise description of the insect follows. Short notes of the distribution, biology and food plants are appended, and finally the writer's opinion as to the status of the insect as a pest. A large number of the adults are figured, and in a few instances the larvæ also.

Showing the backward state of economic entomology in India is the fact that only four aphides are placed in this list. A sound foundation is, however, being laid, and we are glad to learn that a supplementary list is to follow when the material is available. In all 131 pests are dealt with, some of which are well known in Europe, such as the diamond-back moth, the turnip moth (*Agrotis segetis*), the large cabbage white, convolvulus hawk moth, the corn aphis, cabbage aphis, and thistle aphis.
F. V. T.

LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of* Nature. *No notice is taken of anonymous communications.*]

The "Friar's Heel" or "Sun Stone."

In an old number of *Notes and Queries* (4, v. 598) E. Dunkin asks "why the 'Friar's Heel' at Stonehenge is so named," and the only answer I can find in the bibliography of Stonehenge (*Wilts Archaeological Magazine*, vol. xxxii.) is as follows:—"It may have been called the Heel stone," observes Prof. Flinders Petrie, "from A.S. *helan*, to hide or conceal, just as a cromlech at Portisham, Dorset, is called the 'Hel-stone.'"

The word *Heal* or *Hele* is used in N. Wiltshire in this sense. "When the ground is dry and hard and the wheat when sown does not sink in and get covered up at once, it is said not to *heal well*" (Dartnell and Goddard, "Glossary of Wiltshire Words." 1893), but this meaning is more applicable to the cromlech than to the upright stone at Stonehenge.

Modern researches as to the date of the erection at Stonehenge point to a time when a Celtic word rather than an A.S. word would have been in use, and it has occurred to me that the word *Heol*, which is the Breton word for *the Sun*, may be an explanation of the name of the stone in question, as it is the stone used for the observation of the rising sun at Midsummer. It would be interesting to learn from Celtic scholars what equivalent Celtic word was in use in Britain when *Heol* was the word used in Brittany, and whether *Heol* or *Hel* would be the Cornish form of the Welsh word for the sun. The Rev. J. Griffith tells me "that *houl* is the oldest Welsh form of the word—then *heil*, and now in literary Welsh *haul*."

The foolish mediæval legend of the devil flinging the stone at a mocking friar and hitting him on the heel is evidently of very late date, but it is singular that a similar legend is attached to the "Hel Stone" in Dorsetshire, where the story is that the devil, playing at quoits in the island of Portland, flung the Hel Stone across to Portisham (see Hutchings' "Dorset," i., 554).

There is another Hel Stone near, so called in common with the cromlech at Portisham, and it stands in a small combe to the north of Long Bredy hut; it is a rude mass about 7 feet high and 7 feet wide, whilst the capstone of the cromlech at Portisham is 10 feet by 7 feet by $2\frac{1}{2}$ feet (Warne's "Ancient Dorset," pp. 111–135).

By the time the legends of the "Friar's Heel" and Hel Stone were invented, the old language would have been a thing of the past, but possibly the old name lingered in the memory of men wholly ignorant of its significance, giving rise to the traditions.

October 4. T. Story Maskelyne.

The Double Drift Theory of Star Motions.

Prof. J. C. Chamberlin's planetismal hypothesis has given geologists a great deal of matter for thought, and on the whole the phenomena with which they are acquainted appear to fall into line when the earth is considered as a body that has always been solid. The cosmical aspect of the question, which Prof. Chamberlin introduced in advancing his hypothesis, geologists are unable to judge, and they are waiting until astronomers give them an opinion before adopting the hypothesis on the larger scale. On the planetismal hypothesis our stellar system is a disc the edge of which is the Milky Way; beyond lies another stellar system, the so-called nebula in Andromeda; for all the most distant stars in the neighbourhood of the nebula appear to be this side of the luminous disc. If our stellar system is of the same nature as that of the nebula in Andromeda, then it must be a spiral nebula with two equivalent arms originating from a central core and winding spirally round the centre in approximately the same plane. Suppose our sun had experienced a gravitational drag and was moving at a less rate than the general average of the other stars, or suppose its spiral course was steeper than the general average, and hence its angular velocity less, then an observer regarding the rest of our stellar system from our planet would see the stars near the centre of the spiral travelling in two directions, those on this side of the centre travelling from right to left, and those on the other side in the reverse direction. Is this not a possible explanation of Prof. J. C. Kapteyn's double-drift theory of star motions? It explains why the two systems travelling in opposite directions should be of equal composition and proportions, but it necessitates that in the region of the sky opposite to that in which the double drift has been observed the drift should be simple.

The explanation also presupposes that our stellar system was once more closely aggregated, and because there is no central core to our system it must be of less bulk than that of the nebula of Andromeda. The two stellar systems, once consisting of closely packed stars and more or less spherical, travelling in opposite directions and approaching each other within reach of the action of gravitation, would have experienced disruption, each throwing out equal equatorial prominences on the same principle as that which produces the tidal bulges. On the nearer approach of the two systems to each other, the smaller of the two, our stellar system, would have experienced the entire disruption which has reduced it to the tenuity which it exhibits, whereas the larger stellar system, the nebula in Andromeda, would have been enabled to keep its central core. Ernest H. L. Schwarz.

Rhodes University College, Grahamstown, Cape
of Good Hope, September 12.

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